



Commonwealth of Massachusetts
Executive Office of Environmental Affairs

Department of Environmental Protection

William F. Weld
Governor

Daniel S. Greenbaum
Commissioner

Superfund Records Center

SITE: TITEFLEX

BREAT: 1.3

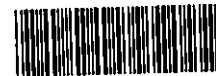
OTHER: 606172

Memorandum

To: Helen Waldorf
From: Martin J. Horne ^{945H}
Date: June 12, 1992
Re: SI, Titeflex, Springfield, MA

Attached is the Site Inspection ~~Report~~ report for the above mentioned site. This SI is being conducted for the MSCA grant quarter ending June 30, 1992. Based on the review of available information, the Titeflex facility has been the site of release of cutting oil (not a CERCLA regulated substance) and VOC (mainly TCE) to the environment. The cutting oil was released to the ground in the "chip shed" area and to a wetlands swale, which has resulted in significant contamination of soil, sediments, groundwater, and surface water. Two separate plumes of dissolved VOC contamination are present in groundwater on-site.

Due to the lack of potential receptors to the groundwater discharge of TCE, the Department recommends this site for no further action under CERCLA.



SEMS DocID 606172



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June 12, 1992

**Site Inspection Report
Titeflex
Springfield, Massachusetts**

CERCLIS NO. MAD0020673

Introduction

The Mass. Department of Environmental Protection (DEP) has completed a Site Inspection (SI) for the Titeflex Corporation Facility site in Springfield, Mass., as part of the Multi-Site Cooperative Agreement Program (MSCA) between the EPA and the Commonwealth of Massachusetts for the purpose of identifying and screening potential hazardous waste sites pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). A Preliminary Assessment (PA) report was completed for this site by the MA DEP in September 1990. This PA recommended that a SI be completed for the site.

The Site Inspection complies with the requirements set forth under CERCLA, as amended. It does not necessarily fulfill the requirements of other EPA or state regulations such as those under the Resource Conservation and Recovery Act (RCRA). The SI is a limited investigation and is intended to be used for the preliminary screening of sites. The SI is the second step of the site screening process set forth by the National Contingency Plan (NCP).

Site Description

The Titeflex facility is located on 603 Hendee Street in Springfield, MA and presently produces high pressure hoses. The site coordinates are 42°07'50" N. latitude, 72°33'30" E longitude (See Figures 1 & 2). The Titeflex Corporation facility is a division of the T.I. Corporation, the address of which is 50 Culzon St., London, England, W1Y7PN. Titeflex purchased the facility in 1951. The previous owner was the Indian Motorcycle Company, which manufactured motorcycles on-site for many years (Tighe & Bond, 1985).

The Titeflex site contains a large building surrounded by paved and landscaped areas. The property is bounded to the east and south by Route 291. To the west and north the property is bounded by the Boston & Albany railroad right-of-way. Other manufacturing facilities are located across the railroad right-of-way. A small

MA DEP - Bureau of Waste Site Cleanup

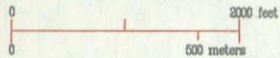
Preliminary Assessment Map: .25, .5, & 1 Mile Radii

SITE NAME:

Titeflex

603 Hendee St.
Springfield

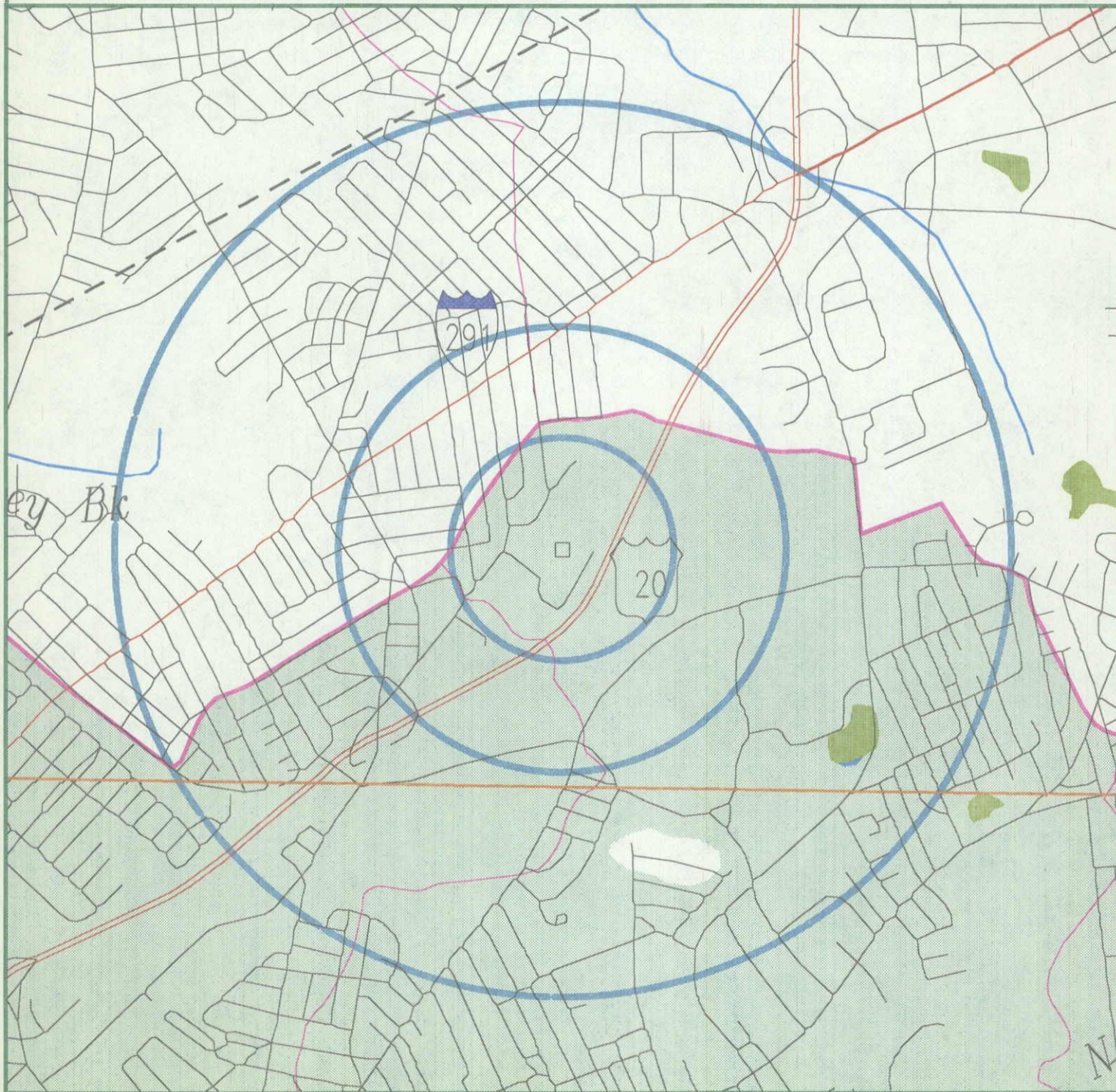
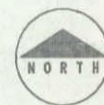
SCALE 1:20,000



- Medium Yield Aquifers
- High Yield Aquifers
- EPA Designated Sole Source Aquifers
- DEP Approved Zone IIs
- Half-Mile Interim Wellhead Protection Areas
- Lakes, Ponds, Rivers and Streams
- Nonforested Freshwater Wetlands
- Salt Marshes
- State, Federal and Private Protected Open Space
- Area of Critical Environmental Concern (ACEC)
- Solid Waste Facilities - Post 1971

- Major Basins
- Sub-basins
- Municipal Boundaries
- County Boundaries
- Zones of Contribution
- USGS Quad Boundaries
- Interstate Highways
- Numbered Routes
- Secondary Roads

- Community Public Water Supplies - Groundwater
- Community Public Water Supplies - Surface Water



MA DEP - Bureau of Waste Site Cleanup

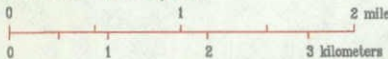
Preliminary Assessment Map: 1, 2, 3 & 4 Mile Radii

SITE NAME:

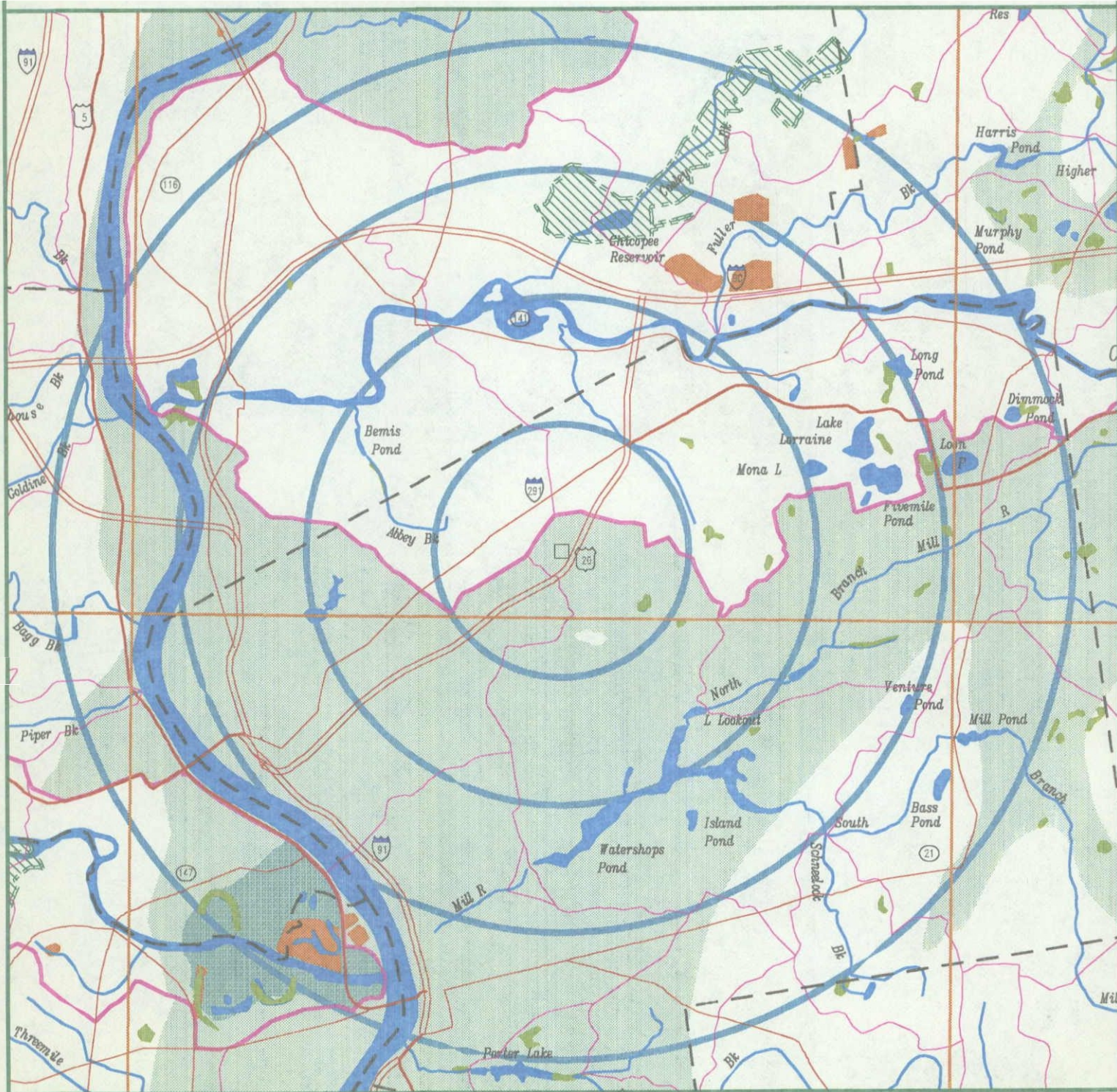
Titeflex

603 Hendee St.
Springfield

SCALE 1:70,000



- | | |
|---|---|
| Medium Yield Aquifers | Major Basins |
| High Yield Aquifers | Sub-basins |
| EPA Designated Sole Source Aquifers | Municipal Boundaries |
| DEP Approved Zone IIs | County Boundaries |
| Half-Mile Interim Wellhead Protection Areas | Zones of Contribution |
| Lakes, Ponds, Elvers and Streams | USGS Quad Boundaries |
| Nonforested Freshwater Wetlands | Interstate Highways |
| Salt Marshes | Numbered Routes |
| State, Federal and Private Protected Open Space | Secondary Roads |
| Area of Critical Environmental Concern (ACEC) | Community Public Water Supplies - Groundwater |
| Solid Waste Facilities - Post 1971 | Community Public Water Supplies - Surface Water |



intermittent stream is located in a wetland swale across Route 291. Access to the site is limited, as the property is surrounded by chain link fences, and is monitored by a security guard (Tighe & Bond, 1985).

High pressure hoses manufactured at the facility include teflon hose, stainless steel tubing, associated fittings. Teflon hose is produced by mixing teflon powder with a lubricant, and extruding and oven curing the product. Stainless steel tubing is formed from stainless steel stock. Fittings are machined and cleaned in a separate portion of the facility. Approximately 1,000 gallons of waste trichloroethylene (TCE) was generated per year. Fittings are also cleaned with hydrochloric acid, hydrofluoric acid, phosphoric acid, sulfuric acid, nitric acid, and sodium hydroxide; acids and caustics are partially neutralized and discharged to the municipal sewer system. A deburring, or "tumbling" room, used to round off edges on fitting parts, generates approximately 300 gallons of sludge per year; this sludge contains a cleanser (Oakite 3) and ceramic powder, and is disposed of at a local landfill. Silver is reclaimed from an X-ray process within the plant. Oil is reclaimed from metal chips produced during manufacturing operations and reused on the facility. Other oil and hazardous materials formerly or presently used or stored on-site include 1,1,1-trichloroethane (TCA), methylene chloride, freon, PCBs (possibly in transformers on-site), water-soluble coolants, mineral spirits, bromoform, potassium ferrocyanide, nickel salt, naphtha, #6 and #4 fuel oil, and waste oil. The use of TCE was discontinued at the plant in 1988. Waste solvents, oils and other materials are stored for a period not exceeding 90 days in 55 gallon drums in an area at the north end of the property, removed and reclaimed by Northeast Solvents, Oil Recovery Corporation, Commercial Disposal Company, and Hampden Color & Chemical Company (MA DEP BWSC, 1990).

Site History

The facility is classified as a large quantity generator under RCRA. Titeflex notified as a generator of hazardous waste on October 10, 1980. Titeflex does not treat, store for more than 90 days, or dispose of hazardous waste on-site (MA DEP RCRA, 1990). The facility discharges wastewater to the Springfield municipal sewer system in accordance with the requirements of the Bondi's Island wastewater treatment plant (MA DEP WPC, 1990).

The following is a chronological summary of oil and hazardous material releases, inspections, investigations and studies at the site, from MA DEP Waste Site Cleanup files (1990):

July 17, 1985

Upon verbal notification by Titeflex, Department personnel investigated a subsurface oil collection system, consisting of an underground storage tank (UST) with french drains, in the "chip shed area" of the plant.

The system was designed to collect oil which had historically leached into the ground from dumpsters used to store oil-soaked metal chips, and was reportedly installed in 1970.

October 25, 1985	The Department issued a Notice of Responsibility (NOR) to Titeflex for the investigation and cleanup of the oil release in the "chip shed" area.
March, 1986	Titeflex's consultant, Tighe & Bond, submitted the results of soil sampling, monitoring well installation and groundwater sampling, in the "chip shed" area; oil & grease contamination was found, no other samples were taken.
July, 1986	Tighe & Bond submitted to the Department the results of additional well installation and sampling; high levels of volatile organic compounds (VOCs) were found in groundwater samples.
July-August, 1986	Two leaking underground storage tanks (USTs) containing #4 and #6 fuel oil and approximately 600 cubic yards of fuel oil contaminated soil associated with USTs were removed from the southeast side of the plant.
August 8, 1986	The Department issued an NOR to Titeflex for the investigation and cleanup of the area of the leaking USTs.
September 10, 1987	The Department approved Tighe & Bond's proposal to install and sample additional monitoring wells to define the extent of the VOC plume.
May 18, 1988	Titeflex notified the Department of a cutting oil discharge into a wetlands swale which had been ongoing since 1975.
June 13, 1988	Titeflex submitted results of an investigation of the oil discharge to the wetlands; such discharge was ceased by connecting storm drains to the town sewer.
August, 1988	Tighe & Bond submitted a Phase II Comprehensive Site Assessment to the Department.
June, 1989	Tighe & Bond submitted a revised Phase II report and a Risk Assessment to Department.

- August, 1989** Tighe & bond submitted to the Department a Phase I Limited Site Investigation for the oil contaminated wetlands swale. The Department considers this to be a separate site, due to the fact that it is off-site, separate from the VOC plumes, and the contamination is due to a cutting oil discharge.
- October 11, 1989** Approximately 300 gallons of heavy naphtha (Isopar G) were spilled on the southeast side of the facility in a parking lot adjoining land.
- February, 1989** The Department issued an NOR to Titeflex for the oil discharge to the wetlands swale.
- September, 1990** Tighe & Bond submitted to the Department a Scope of Work (SOW) for completion of a revised Risk Assessment under the Massachusetts Contingency Plan; The SOW was approved by the Department.

Site inspections have also been performed on a yearly basis by personnel of the Department's RCRA group (MA DEP RCRA files, 1990). The Department has corresponded on numerous occasions with Titeflex and their consultants, Tighe & Bond and Baystate Environmental Consultants, concerning site investigation and remediation, and RCRA requirements.

Site Inspection

The results of all investigations to date in and around the facility have delineated the following areas of contamination: soil and groundwater contaminated with cutting oil in the former "chip shed" area; soil contaminated with #4 and #6 fuel oil in the former leaking UST area; sediment and surface water contaminated with cutting oil in the wetlands swale; and two separate plumes of VOC-contaminated groundwater.

Monitoring wells in the "chip shed" area do not presently contain any floating oil. Fuel oil-contaminated soil from the area of the former leaking USTs was removed in 1986 under the supervision of the Department; monitoring wells in this area show no evidence of floating oil on the groundwater.

Titeflex has estimated that approximately 3,500 gallons of cutting oil was released to the wetlands swale through the storm drain system. The discharge was ceased in 1988 at the request of the Department. In June of 1989, Titeflex and Clean Harbors pumped approximately 1,200 gallons of oil from the storm drain system.

Results

Five groundwater monitoring wells were installed in the right-of-way for Route 291; soil and groundwater samples showed non-detectable (ND) levels of total petroleum hydrocarbons (TPH). Surface water samples from the small intermittent brook in the swale revealed TPH levels of: 1.1 parts per million (ppm) at the culvert where the storm drain system enters the swale; 0.2 ppm 800 feet downstream from the culvert, and 17 ppm 1600 ft downstream from the culvert. The most visibly impacted sediments in the swale cover an area approximately 8 feet wide, 3 to 4 feet deep, and 40 feet long, extending from the culvert outlet. Sediment samples from this area contained up to 38,000 ppm TPH at a depth of 0 to 6 inches, and ND levels of TPH at a depth of 4.5 feet (MA DEP BWSC, 1990). No other analyses besides TPH were performed on these samples.

The cutting oil is not a CERCLA eligible waste although it is a Massachusetts regulated hazardous waste under MA01 (State waste oil code).

On the facility, Titeflex has installed a total of 15 shallow (water table) monitoring wells and 8 deep (40' total depth, with 5' long screens) monitoring wells. These wells have outlined the two dissolved VOC plumes mentioned above. The western plume, which extends westward outside the facility boundary, is approximately 100 feet in length and contains up to 142,00 parts-per-billion (ppb) TCE in shallow wells, and up to 12,300 ppb TCE in deep wells. The southern plume which extends southward from the facility within Titeflex property, is approximately 300 feet in length, and contains up to 12,470 ppb TCE in shallow wells, and up to 130 ppb TCE in a deep well (Tighe & Bond, 1989). The sources of both plumes are suspected to be former bulk handling locations for TCE.

Indoor air concentrations of VOCs were measured at three locations within the Titeflex facility with detection limits for the contaminants of concern ranging from 0.025 to 0.050 milligrams/cubic meter (mg/m^3). 1,1,1-Trichloroethane was detected in all three samples at concentrations of 0.23 to 20 mg/m^3 ; the OSHA PEL is 1900 mg/m^3 ; Trichloroethane was detected below the detection limit of 0.050 mg/m^3 ; the OSHA PEL is 270 mg/m^3 . Acetone, chloroform, and toluene were all detected well below the OSHA PELs.

The Department requires quarterly sampling of groundwater monitoring wells on site until a final remedial measure is completed.

Site Geology

Surficial geologic materials at the site consist of glacial sand and gravel to a depth of 41 to 47 feet, underlain by sand and clay

silts, in turn underlain by glacial till and bedrock. The silt/till layer is believed to limit the downward migration of TCE. Groundwater velocity at the site is estimated to be 20 feet/year, and groundwater flow is generally towards the west. Tighe & Bond reports that the nearest possible surface water discharge point for groundwater is Abbey Brook, approximately 4700 feet downgradient. However, the storm drain discharge to the wetlands swale is less than one quarter of a mile southeast of the plant (Tighe & Bond, 1988).

Groundwater Pathway

There are no known community or non-community water supply wells within a four mile radius of the site. The city of Springfield obtains its drinking water from the Cobble Mountain Reservoir, located approximately fifteen miles upgradient and west of the site.

Houses with Private Wells						
Town	0- $\frac{1}{4}$	$\frac{1}{4}$ - $\frac{1}{2}$	$\frac{1}{2}$ -1	1-2	2-3	3-4
Springfield	0	0	0	0	0	3
Total Pop.	0	0	0	0	0	7.80

The town population was determined from the 1990 U.S. Census with Springfield at 2.60 residents per household. The nearest private groundwater supply is located 3.2 miles southwest of the site in Springfield off Boston Road.

Surface Water Pathway

The surface water runoff pathway is via a storm drain system to a drainage swale flowing south easterly approximately 0.25 miles beneath Interstate 291 to a discharge point in a wetland in Blunt Park. Surface water flow continues into Carlisle Brook which flows 0.50 miles into Lake Massasoit (also know as watershops Pond). Lake Massasoit surface water flows via the Mill River, which is culverted and channeled through the city, into the Conneticut River, 2.4 miles away. The Conneticut River flows south 12.1 miles towards Conneticut.

The surface water discharge point for groundwater is Abbey Brook, more than one mile downgradient. Abbey Brook flows 1.25 stream miles into the Chicopee River which flows 1.5 miles west into the Conneticut River. The Conneticut River flows south 12.25 miles towards Conneticut.

Sensitive Environments**Sensitive Environments Located Along
the 15-Mile Surface Water Pathway**

<u>Distance to</u> <u>Sensitive</u> <u>Environment</u>	<u>Surface</u> <u>Water Body</u>	<u>Sensitive Environment</u>
.25 mile	Storm drain	Blunt Park Wetlands
2.4 Miles	Conneticut River	Federal-Listed Endangered Species Shortnose Sturgeon (Acipenser Brevirorstrum)
2.4 Miles	Conneticut River	State-Listed Endangered Species Winged Monkey-Flower (Mimulus alatus)
2.4 Miles	Conneticut River	State-Listed Threatened Species Narrow-leaved Spring Beauty (Claytonia virginica)

(U.S.G.S. Quadrangle Maps and Department of Fisheries and Wildlife, Natural Heritage & Endangered Species Program)

Drinking Water Resources

There are no known surface water intakes within fifteen miles downstream of the site (MA DEP DWS, 1990).

Human Food Resources

The fisheries located along the 15 mile migration pathway are listed below. (MA Div. of Fisheries & Wildlife, 1991)

Surface Water

Conneticut River

Fishery

Large mouth and Small mouth
Bass

Soil Exposure Pathway

The targets subject to potential contamination through contact with soils at the Titeflex facility are the twenty-five people presently employed at the site. The number of nearby residents within 1-mile walking distance of the site is approximately 15,000. The nearest off-site residence is approximately 500 feet from the site.

There are no terrestrial sensitive environments on or near the property (MA Department of Fish and Wildlife, 1991).

Air Pathway

Targets subject to potential contamination via the air pathway at the Titeflex facility include residents within 4 miles of the property. Nearby land use is commercial and residential. The following tables summarize the human population and wetland acreage located within 4 miles of the site. There are no other sensitive environments within a 4 mile radius.

Total Population Within a 4-Mile Radius

<u>Distance Ring (miles)</u>	<u>Approximate Population</u>
0.00-0.25	958
0.25-0.50	3,007
0.50-1.00	11,517
1.00-2.00	46,067
2.00-3.00	76,779
3.00-4.00	107,490

The population for each distance ring was determined from the U.S. Census Bureau statistics of population per square mile for the city of Springfield (4890.4 people/mi²).

Total Wetland Acreage Within a 4-Mile Radius

<u>Distance Ring (miles)</u>	<u>Total Acreage (mi²)</u>
0.00-1.00	0.23
1.00-2.00	0.00
2.00-3.00	0.16
3.00-4.00	0.03

Summary

Cutting oil (not a CERCLA regulated substance) was historically released to the ground in the "chip shed" area and to a wetlands swale, which has resulted in significant contamination of soil, sediments, groundwater, and surface water. The discharge of oil was ceased in 1986 and 1987.

Two separate plumes of dissolved VOC contamination are present in groundwater on-site. Groundwater samples from the western plume have contained up to 142,000 ppb TCE at the water table and up to 12,300 ppb TCE at a depth of 40 feet. Groundwater samples from the southern plume have contained up to 12,470 ppb TCE at the water table and up to 130 ppb TCE at a depth of 40 feet. Titeflex discontinued the use of TCE at the plant in 1988.

Due to the lack of potential receptors to the groundwater discharge of TCE, the Department recommends this site for no further action under CERCLA.

References

1. DEP Bureau of Waste Site Cleanup Files, Titeflex Preliminary Assessment, Prepared September 1990.
2. USGS, 1979 Mass. Quadrant Maps, U.S. Geological Survey Series 7.5' topographic. Springfield North, Springfield South, Ludlow and Hampden.
3. Telecon with Springfield Water Dept. Emp. Marty Cunningham.
4. Distribution Map of Springfield and Ludlow.
5. Tighe & Bond, 1989, Phase II Site Assessment Report, June.
6. U.S. Census Bureau 1990 Statistics, RE: Persons per Household and Persons per Square Mile.
7. Division of Fisheries and Wildlife, January 29, 1992 Letter from the Natural Heritage & Endangered Species Program.
8. Division of Fisheries and Wildlife, 1991 Fisheries and Stocked Waters listing.

1.0 Introduction

1.1 Objectives and Statement of Work

This Site Risk Characterization of the Titeflex facility at 603 Hendee Street in Springfield Massachusetts (Site Identification Springfield 1-0209P-89305) is intended to accompany the Phase II investigations performed by Tighe and Bond Consulting Engineers (Tighe and Bond, 1987, 1988, 1989).

The objective of the Site Risk Characterization is to determine the extent to which the site conditions, as evaluated from studies conducted in the Phase I and II Remedial Investigations, may impact human health, public welfare, or the environment. The present assessment has been conducted using data from the site as it exists currently. As such, it may be regarded as an assessment of the "No-action Alternative". Thus, the findings of this study are important input to the risk manager's decision as to whether further action is required at the site.

This assessment was conducted according to guidance provided by the Massachusetts Department of Environmental Protection (DEP) (DEP, 1989), as described in a workplan submitted to DEP on May 22, 1990 (ESE, 1990a), which was conditionally approved September 18, 1990 (DEP, 1990), and amended October 9, 1990 (ESE, 1990b).

1.2 Background

Preliminary investigations of groundwater quality on property occupied by the Titeflex Corporation revealed low concentrations of volatile organic compounds (VOC's) in water samples taken from shallow overburden monitoring wells. Further on-site investigation revealed higher concentrations of VOC's in deeper monitoring wells (Tighe and Bond, 1987).

Requirements issued by DEP prompted off-site investigations to further characterize groundwater movement and to determine the nature and extent of the plume. The first of two Phase II reports (Tighe and Bond, 1988) concluded that the groundwater flow is in a westerly direction and, of two plumes detected, the one emerging from the west side of the property (MW-T-6S-D) should be further evaluated. Data presented in the second Phase II report (Tighe and Bond, 1989) showed that this plume had migrated off-site (to the west) and that, compared to analytical data from 1986-1988, the VOC concentrations in the groundwater had decreased. These investigations also confirmed earlier analyses which indicated that trichloroethene is the primary constituent of concern in groundwater.



2.0 Site Risk Characterization

2.1 Current and Foreseeable Land Use.

The location of the Titeflex site is indicated in Figure 2-1. The Titeflex facility is located on industrially zoned property, with the nearest residential zoning on the east side of Page Avenue, 500 - 600 feet from the Titeflex property boundary. Abutters are entirely industrially zoned, and the eastern boundary of the Titeflex property abuts the right-of-way for Route 291. Zoning for the area is shown in Figure 2-2.

ESE interviewed members of Titeflex management, the Springfield Planning Board, and the Department of Health with regard to regulations governing the area surrounding the Titeflex site, as well as any available plans for future use.

Mr. Mark Albino, Special Projects Coordinator for Titeflex indicates the company is financially stable and has firm intentions of continued operations at the Hendee Street site. No current plans exist to withdraw groundwater or to undertake any construction that would disturb areas subject to the current environmental investigation.

Neither Mr. Albino, nor any city official interviewed by ESE was aware of any drinking water well in the vicinity of Titeflex.

The only groundwater wells of any sort that could be identified were at the Springfield Wire Company (283 Cottage Street) and Baystate Gas Company (2025 Roosevelt Avenue). Officials of these firms indicated the Springfield Wire Company well is used only for watering lawns, while the Baystate Gas Company well is used for lawn watering and washing vehicles.

ESE contacted the Springfield Planning Board, which enforces zoning regulations on, October 1, 1990. The respondent indicated that there are no set regulations for zoning changes. Any citizen or property owner may appear before the Board and petition for change. The decision of the Board is based on technical feasibility of the alteration, and it was the respondent's opinion that a change in zoning for the Titeflex property to residential would not be approved.

ESE obtained a copy of The Neighborhood Profile for East Springfield (the area includes the Titeflex site) (Springfield Planning Department, 1988). This document is reproduced in Appendix A of this report. The Neighborhood Profile indicates the proposed land use for the area including the Titeflex facility, is "Commercial Utility", which is consistent with the current zoning of the property as "Industrial A."



ESE also spoke with Mr. Robert Oaks, principal planner for the Planning Board on October 1 and October 9, 1990. Springfield obtains water from a series of reservoirs. Cobble Mountain Reservoir is the main source of potable water. It is recharged by watershed runoff and precipitation. Mr. Oaks estimated Cobble Mountain Reservoir to be 15-20 miles from the Smith and Wesson plant, a landmark in the vicinity of the Titeflex facility. Three backup reservoirs (Borden Brook, Littleneck, and Ludlow) are also distant from Titeflex. Water availability is such that Springfield sells water to neighboring towns. Mr. Oaks had no knowledge of any plans to develop new water resources in Springfield, and offered the opinion that the industrial area of the city, where Titeflex is located, would not be a likely location for well placement.

Mr. Fairbanks, Chief Engineer for the Springfield Water Department, was contacted by telephone on October 1, 1990. To his knowledge, there are no plans for obtaining water from the area around the Titeflex facility. The department keeps no records of private wells, but indicated there is a 12 inch water main on Hendee Street and mostly everyone is on city water.

Mr. John Canning of the Springfield Health Department was contacted by telephone on October 1, 1990. The Health Department only keeps records for private water wells installed prior to 1940. No records of private wells were found for the Page ~~Area~~^{Site} from these data. Mr. Canning also was of the opinion that private well water for human consumption was restricted to the suburbs, and that most City residents were served by municipal supply.

It would appear from this information that foreseeable land use is not likely to be substantially different from current uses. For purposes of the risk characterization, it will be assumed the Titeflex property is occupied by an industrial manufacturing facility and that groundwater in the vicinity of the site will not be used for human consumption.

2.2 Hazard Identification

The purpose of the hazard identification step is to delineate the nature and extent of the chemical release, and identify the toxic properties of each chemical detected at the site.

2.2.1 Selection of Chemicals of Concern

The Phase I and II analytical results of the Tighe and Bond investigations (1987, 1988, 1989) were used for the purposes of the Hazard Identification in the Site Risk Characterization. Tighe and Bond resampled certain wells on the property in May, 1990. These data were also used for chemical selection.



A soil gas survey in the vicinity of MW-13, and air sampling inside the Titeflex Building was conducted by Tighe and Bond. These results are given in Appendix B of this report. The soil gas survey and air sampling were conducted in support of the risk characterization, and were limited, for the most part, to chemicals identified as chemicals of concern in groundwater. Thus, the following discussion pertains to the selection of chemicals of concern from the groundwater analytical database.

Groundwater results are given in Table 2-1. ESE prepared descriptive statistics for the groundwater data base, as shown in Table 2-2. It can be seen in Table 2-2 that the following volatile organic chemicals have been detected in groundwater samples to date:

- ☐ 1,1-Dichloroethane
- ☐ 1,2-Dichloroethane
- ☐ 1,1-Dichloroethene
- ☐ 1,2-trans-Dichloroethene
- ☐ 1,2-cis-Dichloroethene
- ☐ Methylene Chloride
- ☐ Tetrachloroethene
- ☐ Toluene
- ☐ 1,1,1-Trichloroethane
- ☐ Trichloroethene
- ☐ 1,3,5-Trimethylbenzene

However, further evaluation of the data indicates that several compounds detected in groundwater sampled in 1986 were not detected in the subsequent sampling rounds of 1988, 1989, and 1990. These compounds were toluene, 1,2-dichloroethane, 1,2-cis-dichloroethene, and methylene chloride. For this reason, these chemicals have been eliminated from further characterization in this report.

Tetrachloroethene had a very low frequency of detection, and the most recent sampling round detected concentrations very close to the limit of detection. No on-site well sample has had detectable levels of tetrachloroethene. As tetrachloroethene was detected only off-site, and its distribution is dissimilar from other constituents (tetrachloroethene is found in shallow wells, the remaining chemicals are found in deep wells), this does not appear to be a site related chemical, and risk characterization by Titeflex does not seem warranted.



Title: Facility
Springfield, Massachusetts
Risk Characterization

Table 2-1
Groundwater Analytical Results

Location	6-S	6-S	6-S	6-S	7-S	7-S	7-S	8-S	8-S	9-D	9-S	9-S
Sampling Date	07/11/86	12/02/86	06/06/88	06/29/88	12/02/86	12/23/86	06/06/88	12/02/86	12/23/86	06/06/88	12/02/86	12/23/86
Concentration Units	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
Analyte (Qualifier)	6-S	6-S	6-S	6-S	7-S	7-S	7-S	8-S	8-S	9-D	9-S	9-S
Benzene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,1-Dichloroethane	45.00	12.80	ND	ND	ND	ND	ND	ND	ND	ND	27.40	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.20	ND
1,1-Dichloroethene	14.20	ND	ND	ND	ND	ND	ND	ND	ND	ND	16.40	ND
1,2-Trans-Dichloroethene	561.00	64.40	ND	ND	83.40	103.00	5	BQI 383.00	565.00	ND	28.80	52.10
Cis-1,2-Dichloroethene	N/A	N/A	ND	ND	N/A	ND	76.00	N/A	ND	ND	N/A	ND
Methylene Chloride	ND	19.00	ND	ND	ND	ND	ND	ND	ND	ND	20.70	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	2.63	ND	ND	54.00	17.50
Toluene	2.30	ND	ND	ND	ND	ND	ND	ND	ND	ND	20.60	11.20
1,1,1-Trichloroethane	50.10	25.60	ND	ND	ND	ND	ND	ND	ND	ND	20.60	11.20
Trichloroethene	7360	2120	142000	72800	208	219	835	2360	2130	128	12300	5220

Location	9-S	9-S	9-S	9-S	9-S	9-S	9-S	9-S	9-S	9-S	9-S	9-S
Sampling Date	06/06/88											
Concentration Units	UG/L											
Analyte (Qualifier)	9-S	9-S	9-S	9-S	9-S	9-S	9-S	9-S	9-S	9-S	9-S	9-S
Benzene	N/A											
1,1-Dichloroethane	ND											
1,2-Dichloroethane	ND											
1,1-Dichloroethene	ND											
1,2-Trans-Dichloroethene	ND											
Cis-1,2-Dichloroethene	ND											
Methylene Chloride	ND											
Tetrachloroethene	ND											
Toluene	ND											
1,1,1-Trichloroethane	ND											
Trichloroethene	3070.00											

Source: Tighe and Bond, 1987, 1988, 1989 and samples identified in Appendix B.

(F:\E\VF021.wrl)

TS - TRACE

BQI - COMPOUND DETECTED BELOW MINIMUM DETECTION LIMIT

ND - NOT DETECTED

N/A - NOT ANALYZED OR NOT REPORTED

Tireflex Facility
Springfield, Massachusetts
Risk Characterization

Table 2-1
Groundwater Analytical Results

Monitoring Location Sampling Date Concentration Units Qualifier	10-D 12/02/86 UG/L	10-D 06/06/88 UG/L	10-S 12/02/86 UG/L	10-S 06/06/88 UG/L	11-D 12/02/86 UG/L	11-D 06/06/88 UG/L	11-S 12/02/86 UG/L	11-S 06/06/88 UG/L	12-D 12/02/86 UG/L	12-S 12/02/86 UG/L	13-D 06/06/88 UG/L	13-D 05/08/90 UG/L
1,1-Dichloroethane	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND
1,1,1-Trichloroethane	748	1408.00	57.10	ND	ND	ND	ND	ND	ND	ND	574.00	350.00
1,1,2-Trichloroethane	7.68	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	334	280.00	10.30	ND	ND	ND	ND	ND	ND	ND	777.00	410.00
trans-1,2-Dichloroethane	230	ND	70.90	ND	4.44	ND	ND	ND	5.51	ND	ND	ND
1,2-Dichloroethane	N/A	100	BQL	N/A	ND	N/A	ND	N/A	N/A	N/A	50	BQL
1,1,2,2-Tetrachloroethane	17.10	ND	8.65	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	ND	ND	8.40	ND	ND	ND	ND	ND	ND	ND	ND	N/A
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	7.45	ND	ND	ND	5.51	ND	ND	ND
1,1,1-Trichloroethane	108	ND	12.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	3.61	ND	73.20	209.00	63.40	189.00	37.40	81.00	2.87	5.37	296.00	210.00

Monitoring Location Sampling Date Concentration Units Qualifier	13-S 06/06/88 UG/L	13-S (1) 05/08/90 UG/L	14-D 06/06/88 UG/L	14-S 06/06/88 UG/L	15-D 06/06/88 UG/L	15-S 06/06/88 UG/L	16-D 05/08/90 UG/L	16-S 05/08/90 UG/L	6-D 12/02/86 UG/L	6-D 06/06/88 UG/L	6-D 06/29/88 UG/L	6-S 06/09/86 UG/L
1,1-Dichloroethane	N/A	ND	N/A	N/A	N/A	N/A	25	BQL	ND	N/A	N/A	N/A
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	753.00	5250.00	2160.00	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	5.35	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	744.00	5750.00	4060.00	6.21
trans-1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	54.80	ND	ND	400.00
1,2-Dichloroethane	ND	N/A	50	BQL	ND	ND	200.00	N/A	N/A	250	BQL	N/A
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	65.30	ND	ND	ND
1,1,1,2-Tetrachloroethane	ND	N/A	ND	ND	ND	ND	N/A	2.5	BQL	ND	ND	ND
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	20.10
1,1,1-Trichloroethane	ND	ND	ND	5	BQL	ND	ND	ND	1560.00	545.00	1000	BQL
1,1,2-Trichloroethane	1763	ND	ND	23.40	190.00	ND	1100.00	ND	57.50	810.00	4760.00	3670.00

1,1,2,2-Tetrachloroethane and 1,1,1,2-Tetrachloroethane identified in Appendix B.

1,1,2,2-Tetrachloroethane

TRACE

COMPOUND DETECTED BELOW MINIMUM DETECTION LIMIT

NOT DETECTED

NOT ANALYZED OR NOT REPORTED



Commonwealth of Massachusetts
Executive Office of Environmental Affairs

Department of Environmental Protection

William F. Weld
Governor

Daniel S. Greenbaum
Commissioner

TELEPHONE LOG

Person Making Call Martin Horne Agency DEP
Person Being Called _____ Title Information officer
Agency U.S. Census Bureau
Phone Number (617) 565-7200 Date 1/9/92 Time 2:00
Site Name Titefle Site Number 1-
Reason For Call To get information on the population density for Springfield

Summary of Call

The population density for the City of Springfield is 4890.4 people per square mile. The number of residents per house hold is 2.60.



Commonwealth of Massachusetts
Executive Office of Environmental Affairs

Department of Environmental Protection

William F. Weld
Governor

Daniel S. Greenbaum
Commissioner

TELEPHONE LOG

Person Making Call Martin Horne Agency DEP
Person Being Called Marty Cunningham Title _____
Agency Springfield Water Department
Phone Number _____ Date 11/17/91 Time 1:00
Site Name Titeflex Site Number 1-
Reason For call Determine Drinking water supplies in
the area.

Summary of call

Mr. Cunningham stated that there were no public drinking water supplies within a four mile radius of the site. The City of Springfield receives its drinking water from the Cobble Mountain Reservoir, fifteen miles away.



Division of Fisheries & Wildlife

Wayne F. MacCallum, *Director*

29 January 1992

NHESP File No. 91-652

Martin J. Horne
Department of Environmental Protection
One Winter Street
Boston, MA 02108

Re: Surface water migration pathways - hazardous waste site research
Hop Brook to the Sudbury River
Connecticut River from Springfield to Connecticut state line

Dear Mr. Horne:

Thank you for contacting the Natural Heritage and Endangered Species Program regarding rare species and ecologically significant natural communities in the vicinity of the sites referred to above and as described in your letter of December 3, 1991.

At this time we are aware of a number of species within both of the migration pathways listed above. First, from Hop Brook to the Sudbury River:

<u>Common Name</u>	<u>Scientific Name</u>	<u>State Status</u>
<u>Between Wash Brook and Heard Pond:</u>		
Least Bittern	<u>Ixobrychus exilis</u>	Threatened
American Bittern	<u>Botaurus lentiginosus</u>	Special Concern
King Rail	<u>Rallus elegans</u>	Threatened
Common Moorhen	<u>Gallinula chloropus</u>	Special Concern

Between Routes 20 and 27:

Blue-spotted Salamander	<u>Ambystoma laterale</u>	Special Concern
Common Moorhen	<u>Gallinula chloropus</u>	Special Concern

Sedge Meadows:

Common Moorhen	<u>Gallinula chloropus</u>	Special Concern
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Fairhaven Bay on the Sudbury River:

Climbing Fumitory	<u>Adlumia fungosa</u>	Threatened
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One mile north of Fairhaven Bay:

Certified Vernal Pool



Natural Heritage & Endangered Species Program

100 Cambridge Street, Boston, MA 02202 (617) 727-9194, (617) 727-3151

An Agency of the Department of Fisheries, Wildlife & Environmental Law Enforcement

Martin Horne
DEP
NHESP File No. 91-652
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Second, the Connecticut River from the Springfield to state line:

<u>Common Name</u>	<u>Scientific Name</u>	<u>State Status</u>
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From South End Bridge to state line:

Shortnose Sturgeon	<u>Acipenser brevirostrum</u>	Endangered *
Common Moorhen	<u>Gallinula chloropus</u>	Special Concern
Burbot	<u>Lota lota</u>	Special Concern
Winged Monkey-flower	<u>Mimulus alatus</u>	Endangered
Narrow-leaved Spring Beauty	<u>Claytonia virginica</u>	Threatened

* Listed as Endangered by the U.S. Fish and Wildlife Service.

Please note that this determination is based on the most recent information available in the Natural Heritage database, which is constantly being expanded and updated through ongoing research and inventory. Should new rare species information become available, this evaluation may be reconsidered. To obtain an evaluation of the potential impacts to inland fisheries contact Ken Simmons, Aquatic Biologist, Division of Fisheries and Wildlife, Field Headquarters, Route 135, Westborough, MA 01581.

Please call me or Jay Copeland if you need further assistance.

Sincerely,



Patricia Huckery-Tower
Environmental Review Assistant

PHT/pht

BEST BETS FOR BASS

Major bass fishing ponds in Massachusetts. This list does not include many lesser ponds that are known to contain bass.

WESTERN DISTRICT

LARGE MOUTH BASS

Benedict Pond, Monterey
Cheshire Reservoir, Cheshire
Goose Pond, Lee
Laurel Lake, Lee
Onota Lake, Pittsfield

CONN. VALLEY DISTRICT

LARGE MOUTH BASS

Congamond Lakes, Southwick
Cranberry Lake, Sunderland
Forest Lake, Palmer
Hamilton Reservoir, Holland
Hampton Pond, Westfield
Metacomb Pond, Belchertown
Quabbin Reservoir, New Salem
Warner Lake, Hadley

LARGE MOUTH BASS RIVERS

Chicopee River, Ludlow, Wilbraham, Chicopee
Connecticut River and Oxbow Rivers
Quinebaug River, Holland

NORTHEAST DISTRICT

LARGE MOUTH BASS

Althea Lake, Tyngsboro
Ashland Reservoir, Ashland
Baddacook Pond, Groton
Chebacco Lake, Wenham
Cochituate Lake, (North, Middle,
South), Framingham, Natick, Wayland
Crystal Lake, (Newfield Pond),
Chelmsford
Cutler Pond, Needham
Dug Pond, Natick
Farm Pond, Framingham
Flint Pond, Tyngsboro
Forest Lake, Methuen
Forge Pond, Westford

SMALL MOUTH BASS

Center Pond, Becket
Goose Pond, Lee
Greenwater Pond, Becket
Garfield Lake, Monterey
Norwich Lake, Huntington

SMALL MOUTH BASS

Quabbin Reservoir, New Salem

SMALL MOUTH BASS RIVERS

Connecticut River
Swift River, Belchertown
Westfield River

Fort Meadow Pond, Hudson
Gardner Lake, Amesbury
Jamaica Pond, Boston
Knops Pond, Groton
Massapoag Lake, Dunstable
North Pond, Hopkinton and Milford
Nutting's Pond, Billerica
Pearl Lake, Wrentham
Ponkapoag Pond, Randolph
Quannapowitt Lake, Wakefield
Saltonstall Lake, Haverhill
Spectacle Pond, Littleton
Stiles Pond, West Boxford
Whitehall Lake, Hopkinton